BEFORE THE

Federal Communications Commission

WASHINGTON, D.C. 20554

In the Matter of	)	
	)	
Redevelopment of Spectrum to	)	
Encourage Innovation in the	)	ET Docket No. 92-9
Use of New Telecommunications	)	
Technologies	)	

To: The Commission

COMMENTS OF
METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Shirley S. Fujimoto
Brian T. Ashby

Keller and Heckman
1001 G Street, N.W.
Suite 500 West
Washington, D.C. 20001
(202) 434-4100

Its Attorneys

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SUMMARY

Metropolitan Water District of Southern California, a licensee of frequencies in the 2 GHz band, firmly believes that the Federal Communications Commission's proposal to reallocate the 2 GHz band for use by emerging telecommunications technologies would be contrary to the public interest. In this regard, the Commission's specific statutory directive and well-settled legal precedent require it to demonstrate in reallocation proceedings that its proposed reallocation would be in the public interest. In this case, reallocation of the 2 GHz band would not be in the public interest since many of the operations which are currently carried over the band are critical to public health and safety and since, at least in many areas of the country, there is no adequate alternative spectrum or other nonradio communications medium that is capable of providing the long-haul, highly reliable transmission links afforded by frequencies in the 2 GHz range.

Relatedly, the Commission's proposal is flawed because it is based on a study that failed to adequately consider using spectrum, other than those frequencies which were targeted for reallocation in the proposal, as a home for emerging technologies. This failure to consider other spectrum is problematic because spectrum exists both above

and below 2 GHz, as well as within the 2 GHz band, that would provide a suitable home for emerging technologies while avoiding the massive disruptions to critical services which reallocation of the 2 GHz band will entail.

It is also important to note that: 1) there is no empirical evidence indicating any present or near-term public demand for the emerging technologies identified by the Commission in its reallocation proposal; or 2) the proposed reallocation will not ensure international equipment interoperability or new equipment manufacturing jobs for U.S. workers.. In light of the above and the fact that the spectrum targeted by the Commission for reallocation is used to perform vital public safety and health functions, reallocation of the 2 GHz band in the manner proposed would be nothing less than an abrogation of the Commission's mandate to act in the public interest.

Notwithstanding the above, should the Commission determine that an allocation for emerging technologies is necessary, Metropolitan believes that a more rational examination of the amount of spectrum required by emerging technologies should be conducted and that the transition and operational plan proposed by the Commission should be amended to provide existing users of the 2 GHz band with an adequate level of interference protection. With regard to

the need for a reexamination of emerging technology spectrum requirements, Metropolitan notes that the 220 megahertz of spectrum set aside for emerging technologies in this proceeding significantly exceeds the total amount of spectrum now allocated for both private and common carrier mobile services. Since the Commission has offered no compelling explanation for setting aside more spectrum for services that are land mobile in nature than is currently allocated for all existing land mobile services, the proposal to reallocate 220 megahertz could be found to be arbitrary and capricious.

As for the need to amend the proposed transition and operational plans, Metropolitan points out that the critical operations currently conducted in the 2 GHz band cannot tolerate any objectionable level of interference, and that any transition and subsequent operations plan for accommodating emerging technologies should therefore allow existing 2 GHz users to operate on a primary basis vis-a-vis the operators of any new technologies licensed in the band. Moreover, in order to ensure that telecommunications systems vital to the public welfare can expand to meet future needs, the Commission should reserve a significant portion of the 2 GHz solely for the expansion of state and local government systems.

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To: The Commission

COMMENTS OF METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Metropolitan Water District of Southern California ("Metropolitan"), by its attorneys, hereby respectfully submits these Comments in response to the Notice of Proposed Rule Making ("Notice") adopted on January 16, 1992 by the Federal Communications Commission ("Commission") in the above-referenced proceeding.1/

1/ 7 FCC Rcd 1542. In the Notice, the Commission indicated that Comments on the issues raised therein were due on or before April 21, 1992. The Commission later extended the deadline for filing Comments to June 5, 1992 in an Order Extending Time for Comments and Reply Comments which was adopted on March 31, 1992. See DA 92-398 (released April 1, 1992). Still later, in an Order denying Request to Defer Comment Dates which was adopted on June 4, 1992, the Commission again extended the Comment filing deadline to June 8, 1992. See DA 92-694 (released June 4, 1992).

I. PRELIMINARY STATEMENT

1. Metropolitan Water District of Southern California is one of the world's largest water agencies. Approximately half of all the water used by more than 15 million consumers on a daily basis in urban Southern California is imported by Metropolitan from the Colorado River and the California State Water Project. Metropolitan wholesales this water to 27 member public agencies which, along with 130 subagencies, retail the water to homes, businesses, and farms in a 5,200 square mile service area. All in all, Metropolitan delivers over two and a half billion gallons of water a day to its 27 member public agencies. Given the dry climate of Southern California and the consequent shortage of water, much of the population in this area, including the populations of both Los Angeles and San Diego, would be unable to survive without Metropolitan's water deliveries.

2. In support of its water delivery system, Metropolitan owns and operates a private communications network consisting of a CBX telephone system, private operational-fixed microwave service ("OFS") links in both the Los Angeles basin and the desert region east of Los Angeles, and data components. This network stretches from Los Angeles to the Colorado River. One portion of this network includes a number of 2 GHz microwave links which

connect three of Metropolitan's facilities located in the desert area bordering the Colorado River with the rest of the network. The first of these 2 GHz microwave links connects Metropolitan's facility at Big Maria Mountain to its facility at Black Metal Peak, and the second connects its Black Metal Peak facility to its Gene Pumping Plant.2/ These 2 GHz links enable the Gene Pump Plant, the central hub of Metropolitan's efforts at pumping water from the Colorado River to population centers in Los Angeles and San Diego, to remain in constant contact with Metropolitan's Los Angeles headquarters, and as such, are vital to Metropolitan's critically important water delivery activities. Moreover, the supervisory control and data acquisition ("SCADA") capabilities provided by these links allow remote monitoring and control of water supplies and thereby also enable Metropolitan to act promptly to ensure a stable water supply to the residences and businesses in its service area. Therefore, since the Commission proposes to reallocate spectrum in the 2 GHz band for use by emerging telecommunications technologies, Metropolitan is extremely concerned about the outcome of this proceeding and appreciates having this opportunity to submit these Comments.

2/ The Commission authorized Metropolitan to operate the first of these microwave links on November 9, 1987 under call sign WHH 556, and the second on June 8, 1989 under call sign WHH 555.

3. The instant proceeding was initiated on January 16, 1992 when the Commission adopted the aforementioned Notice, and is an outgrowth of its earlier Policy Statement and Order which established preliminary guidelines for the development of personal communications services ("PCS").3/ In the Notice, the Commission proposes to reallocate 220 megahertz of spectrum between 1.85 and 2.20 GHz for use by emerging telecommunications technologies such as PCS, data PCS, generic mobile satellites, digital audio broadcasting, and low earth orbit satellites. The specific frequencies targeted for reallocation are 1.85 to 1.99 GHz, 2.11 to 2.15 GHz, and 2.16 to 2.20 GHz. As mentioned above, Metropolitan's 2 GHz microwave links are among the frequencies targeted for reallocation.

4. Under the terms of the Notice, entities which are currently licensed to operate on the frequencies targeted for reallocation will be relocated to frequencies above 3 GHz or forced to switch to alternate, nonradio technologies such as fiber optic cable and/or satellites to meet their telecommunications needs. In this regard, the Notice provides for a 10 to 15 year period in which emerging technologies will be introduced into the 2 GHz band on a

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3/ In the Matter of Amendment of the Commission's Rules to Establish New Personal Communications Services, 6 FCC Rcd 6601 (1991).

co-primary basis with existing users of the band. At the conclusion of this time period, the operations of existing users of the 2 GHz band would become secondary to the operations of the newly licensed emerging technologies. In addition, the Notice would permanently grandfather state and local government entities which were licensed in the 2 GHz band at the time the Notice was adopted. However, as with other existing users of the 2 GHz band, the Notice would require state and local government entities to operate on a co-primary basis with emerging technologies operators.

II. COMMENTS

A. The Commission's Proposal to Place Emerging Technologies in the 2 GHz Band Must Be Rejected

1. Given its dependence on the above-mentioned 2 GHz microwave links to perform its vitally important water delivery function, Metropolitan strongly believes that any attempt by the Commission to reallocate the 2 GHz band for use by emerging telecommunications technologies would have a serious, adverse impact on the people of Southern California. Moreover, given the fact that many other entities across the county, such as public safety organizations, utilities, and railroads, rely on the 2 GHz band for their critically important communications,

Metropolitan also believes the Notice would have an adverse impact on the nation as a whole.

1. The Commission Has Not Considered the Adverse Public Safety Ramifications of Reallocation of OFS Spectrum

2. The Commission's reallocation proposal does not serve the public interest. It will have dangerous ramifications for the public health and safety as well as for the environment. Apparently, the Commission presumes that loss of the targeted spectrum bands will not impact current users or the public's safety because microwave bands above 3 GHz, when coupled with fiber optic and satellite technologies, will serve as adequate replacements for the 2 GHz microwave band.[4/]

3. What the Commission's analysis has failed to consider is that frequencies above the 3 GHz range do not provide the same long-haul capabilities that assignments from the targeted spectrum bands offer.[5/] Significantly,

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4/ Notice, ¶ 20.

5/ For example, one recent experiment designed to test the feasibility of replacing 2 GHz microwave links with 6 GHz spectrum, resulted in a determination that 6 GHz spectrum could not provide an adequate and reliable substitute service event for "shorter range" transmissions, due to environmental interference factors. See Testimony of Robert E. Rainear, Executive Vice President of South Carolina Public Service Authority/Santee Cooper Power Company Before the United States Senate Committee on Commerce, Science and Transportation (June 3, 1992).

the long-distance links employed in Metropolitan's network operate on assignments from the targeted spectrum. Since frequencies above 3 GHz do not have the same long-distance transmission characteristics of 2 GHz spectrum, replacement with higher range frequencies will force Metropolitan to implement numerous "relay points" in order to provide an acceptable alternative to the service it now receives from the targeted spectrum. The addition of each such relay point further reduces the reliability of Metropolitan's communications network since the possibility of outages increases substantially with the imposition of each retransmission point in the system. Further, in the Los Angeles area, the rights-of-way which would be required for construction of additional "relay points" will be prohibitively expensive at best and, in many cases, impossible to obtain due to environmental and/or aesthetic factors. Moreover, the cost of reconfiguring Metropolitan's network would be staggering, and routine operational expenses would increase dramatically due to the need for additional equipment to operate at higher range spectrum.

4. Nor will fiber optic and/or satellite technologies serve as adequate replacements for Metropolitan's 2 GHz frequencies. In many instances, fiber optic systems cannot provide the reliability that microwave radio facilities offer because fiber optic lines are susceptible to breakage.

During disasters such as earthquakes, fiber optic facilities are extremely vulnerable. For instance, during the Loma Prieta earthquake in 1989, microwave towers were affected by the movement of the earth, but importantly, maintained their position and continued to provide reliable communications service throughout the incident. Fiber optic facilities, conversely, were subject to breakage and immediate outage. Moreover, even during ordinary activities such as excavation for construction projects, fiber optic cable can be severed resulting in a total loss of critical services.

5. Similarly, satellite technology is not an adequate substitute for microwave facilities because time delays inherent in signal relay through satellite systems compromise the SCADA system design. This is particularly troublesome for systems which provide "real time" monitoring and control for sensitive operations such as the remote controlled pumping stations, valves, and water relay facilities operated by Metropolitan. Accordingly, since no combination of the proposed substitute technologies can insure the reliability that microwave channels provide, Metropolitan believes the Commission should allow such systems to continue operation without interference.

6. Further, Metropolitan cannot accept the use of any replacement technologies that would place its vital

monitoring and control operations in the hands of commercial communications carriers. In times of outages, quick restoration of service to Metropolitan might not be the first priority of Metropolitan's commercial carrier. Metropolitan believes that potential service lapses and system unreliability will result in catastrophic consequences for the health and/or safety of the public throughout the Los Angeles basin. Metropolitan reminds the Commission that concerns over heightened reliability provided the impetus for private microwave allocations.6/ Moreover, in the ensuing years since the Commission's original OFS allocation decision, reliability of the public switched telephone network has not demonstrated any significant degree of improvement.7/

7. The Commission must demonstrate in reallocation proceedings that its choices will serve the public interest.8/ The proposed reallocation does not meet the requirement of the Commission's public interest mandate. Metropolitan respectfully suggests that protection of human health and/or safety is of greater value than the possible

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6/ In the Matter of Allocation of Frequencies in the Band Above 890 Mc., 27 F.C.C. 359 (1959).

7/ See Asleep at the Switch? : Federal Communications Commission Efforts to Assure Reliability of the Public Telephone Network, 102d Congress, 1st Sess., House Report 102-420 (1991).

8/ 47 U.S.C. § 303(c) (1991).

promise of benefits which might be delivered by proposed new technologies. Also, the proposed new services are "convenience oriented." As such, they are not as vital to the public's health and safety as are the OFS operations currently being performed in the targeted spectrum. Accordingly, the Commission's arbitrary decision to accord "convenience-oriented" uses a greater value than health/safety uses violates the agency's specific statutory directive[9/] and well-settled legal precedent.[10/] Metropolitan is convinced that the proposed reallocation is detrimental to the public interest and that, upon serious analysis, the Commission will see that the nebulous bundle of benefits which might accrue in the future from new technology deployment cannot compete for public value with the health/safety services now provided through 2 GHz microwave systems such as that operated by Metropolitan.

9/ 47 U.S.C. § 151 (1991). Since the adoption of this section, Congress has repeatedly buttressed and elaborated upon the Commission's duty to award public-safety-oriented uses the highest allocation priority. See, e.g., S. Rep. No. 191, 97th Cong., 2d Sess. 14 (1981), reprinted in 1982 U.S. Code Cong. Admin. News 2237, 2250 . . . "radio services which are necessary for the safety of life and property deserve more consideration in allocating spectrum than those services which are more in the nature of a convenience or a luxury." See also, House Rep. No. 98-356, 98th Cong., 1st Sess. 27 (1983), reprinted in 1983 U.S. Code Cong. & Admin. News 2219, 2237 . . . "public safety consideration should be a top priority when frequency allocations are made."

10/ National Association of Broadcasters v. FCC, 740 F.2d 1190, 1214 (1984).

2. The Commission's Spectrum Analysis is Insufficient Because Less Disruptive Alternative Spectrum Choices Were Not Considered

8. The Commission's proposal is primarily based on a spectrum study performed by its Office of Engineering and Technology ("OET").[11/] The OET study and the Notice both dismissed the possibility of using spectrum outside the 1 to 3 GHz range as an emerging technology reserve. The rationale for the Commission's decision not to analyze the possibility of spectrum usage outside the 1 to 3 GHz range was apparently based on its belief that the availability of state-of-the-art technology for mobile equipment limits the proposed new services to spectrum below 3 GHz; and also because spectrum below 1 GHz did not appear to offer contiguous spectrum blocks of sufficient size to accommodate the needs of emerging technology interests.[12/] The Commission refused to analyze these spectrum possibilities even though no specific evidence has been offered by the agency in support of its view that mobile technology will be incapable of using higher frequency ranges over the near term. Metropolitan respectfully submits that the Commission must provide a detailed analysis on this point since significant contiguous blocks of spectrum above the 3 GHz

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11/ "Creating New Technology Bands for Emerging Telecommunications Technology," FCC/OET TS92-1 (January 1992).

12/ Notice, ¶ 12.

range could be made available to meet the needs of emerging technologies without creating the massive disruption which would result from the proposed reallocation.

9. Moreover, the Commission is well aware that in the "mini-cell" configuration in which certain of the proposed emerging technologies (i.e., PCS and data PCS) are designed to operate, frequencies at higher ranges will provide more efficient re-use capability and better operating potential. This means that mobile equipment design using higher range spectrum options could prove easier than would be true should 1 to 3 GHz spectrum be allocated for new mobile technologies.[13/]

10. The Commission also demonstrates a lack of serious analysis by its perfunctory refusal to analyze spectrum below the 1 GHz level to accommodate new technologies. This is especially troublesome since it has been demonstrated that for low power transmission in urban environments such as those contemplated for PCS and data PCS, frequencies below 1 GHz provide the optimal propagation characteristics with respect to penetration of buildings, leaded glass and other signal obstructions.[14/] Moreover, frequencies outside

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13/ See Comments of the American Petroleum Institute in RM-7140, p. 14.

14/ See note 4, supra.

the 1 to 3 GHz range are capable of performing acceptably for the proposed satellite-oriented new technologies such as low earth orbit satellite and digital audio broadcasting.

11. Even if the Commission could demonstrate that frequencies in the 1 to 3 GHz range are optimal for emerging technologies, the Commission's study is additionally flawed in that a careful review of the criteria used by OET demonstrates that spectrum within the 1 to 3 GHz range, other than the targeted bands, can provide a more efficient, cost effective, and significantly less disruptive home for emerging technologies. One megahertz of spectrum may be allocated on a shared basis in the 2.50 to 2.60 GHz band for emerging technologies since current operators in the Multipoint Distribution Service ("MDS") and Instructional Fixed Television Service ("IFTS") now use very little of the spectrum allocated to these services.15/ In this regard, Commission records show that only 3,500 wireless cable systems have been licensed, and that only 900 of these

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15/ While the Commission notes that several thousand applications for assignments in the MDS are pending, these applicants have no claim to a specific spectrum home on the basis of a simple application to the Commission. Since the MDS and ITFS services operate over shorter range distances than the long-haul OFS paths necessary to protect the public safety, the Commission could easily move the few licensees now operating in these bands to higher range frequency bands and could grant pending requests for authorization in the higher frequency ranges since higher range spectrum is readily available and will adequately perform in relatively short-distance operations such as MDS and ITFS.

systems have been constructed. While no one knows how many of these systems are actually operational, the Wireless Cable Association indicates that there are only 94 fully constructed and operational wireless cable systems in the entire U.S.16/

12. Another 120 megahertz of spectrum is available from the band 1.99 to 2.11 GHz. While this band is used for "broadcast auxiliary" operations which undoubtedly have some social value, the Commission has arbitrarily assigned such uses greater value than the health and safety protection operations now conducted in the 2 GHz band. Additionally, while the use of OFS systems has increased substantially over the past decade in order to better ensure the public safety, much of the electronic news gathering activity performed in the broadcast auxiliary band has migrated to satellite technology in recent years. Moreover, MDS, IFTS and broadcast auxiliary operations do not require the absolute reliability which OFS operators must have in order to protect the public health and safety. Accordingly, the Commission must give serious consideration to these bands as spectrum reserve locations.

16/ See The Utilities Telecommunications Council's Petition for Issuance of Further Notice of Proposed Rule Making, ET Docket No. 92-9 (May 1, 1992).

13. Finally, Metropolitan questions the Commission's decision not to examine the possibility or suitability of using federal government spectrum in the 1 to 3 GHz frequency range for the accommodation of new technologies.[17/] The Commission apparently wishes to avoid attempts to use government dedicated spectrum to accommodate new technology interests because of its belief that obtaining such spectrum would be time consuming and uncertain.[18/] Nonetheless, significant amounts of lightly used government spectrum are available in the 1 to 3 GHz range. Due to the extremely light use of the federal government band 1.71 to 1.85 GHz, Congress is now considering reallocating this band to private use. Moreover, the band 2200 to 2290 MHz, which is dedicated to federal government operations, is also lightly used, and the Commission is well aware that these bands could make excellent homes for new technology interests without triggering a costly disruption of OFS services and the concomitant negative impact on public safety which reallocation of the targeted bands will create. The Commission must take into account the potential utilization of government spectrum prior to any final allocation

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17/ Notice, ¶ 21.

18/ Id.

decision in this proceeding.19/

3. International Developments Do Not Compel a Domestic Reallocation

14. In the Notice, the Commission notes that several emerging technologies are being considered or are under development overseas20/ with spectrum in the 1 to 3 GHz range the most likely spectrum choice of foreign governments for deployment of these technologies. The Commission is apparently operating under the belief that an identical domestic spectrum allocation will ensure both international equipment interoperability and increased equipment manufacturing in the U.S. for export overseas.

15. While international transmission standards might be desirable, a simple "common spectrum allocation" will be insufficient to provide international interoperability and spur domestic equipment production. Different transmission methods for mobile technologies exist throughout the world and the software protocols which control global communications hardware vary widely from nation to nation.

19/ See The Association of American Railroads, the Large Public Power Council, and the American Petroleum Institute's Motion to Suspend Proceeding, ET Docket No. 92-9 (April 10, 1992).

20/ Notice, ¶ 5.

It appears that this situation will continue. Therefore, should a common allocation be agreed upon, international equipment interoperability still would not be realized since signaling protocols would differ markedly. Further, numerous discrete frequency bands exist within the 1 to 3 GHz range. It is not certain at this time which specific bands or frequencies will be allocated by different nations to the specific technologies proposed. Accordingly, it is premature for the Commission to make an early allocation decision assigning specific bands to specific emerging technologies, since subsequent spectrum allocations of other nations may differ from those made by the Commission.

16. Nor will a "common allocation standard" stimulate domestic telecommunications equipment production since it is well known that once the "design stage" of a new technology is complete, equipment manufacturing generally moves offshore where the cost of labor is considerably lower. As such, Metropolitan believes that the Commission's faith in a common frequency allocation for emerging technologies for stimulation of American manufacturing and exports is unfounded.

4. There is No Showing of Present Demand for Emerging Technology Services Warranting Reallocation of Critical Spectrum Resources

17. The Commission claims that it needs to allocate spectrum in which to accommodate pending requests for emerging technologies including PCS, data PCS, generic mobile satellite service, digital audio broadcasting, and low earth orbit satellites.[21/] The Commission apparently believes that near-term public demand for these services has sufficiently materialized to require at least 230 megahertz of spectrum to be allocated to meet these needs. Metropolitan notes that there is an absence of any empirical evidence indicating such demand actually exists or will materialize in the near term.

18. Although emerging technology proponents have suggested several technologies to the Commission, neither the Commission nor these proponents have offered evidence that serious marketing studies demonstrate current high demand levels. In fact, it is demonstrable that at least one of the emerging technologies listed in the Notice will have very limited overall market appeal.[22/] Accordingly, the Commission's proposal is highly premature since demand

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21/ Notice, ¶ 4.

22/ See Statement of John DeFeo at the Federal Communications Commission's En Banc Hearing on PCS (December 5, 1991).

for emerging technologies has not been demonstrated and even in those few instances where certain of the proposed new technologies have been made available, operations have not met with major consumer demand. Because no showing of demand for emerging technologies exists, and since the targeted spectrum serves vital public health and safety interests, to reallocate in the manner proposed would be nothing less than an abrogation of the Commission's public interest responsibility.[23/]

B. Should an Emerging Technology Allocation be Inevitable, the Commission Must Designate a More Realistic Amount of Spectrum Than is Proposed

19. The Commission's spectrum study concluded that 220 megahertz in the 1.85 to 2.20 GHz region "could be designated" for innovative technologies and services.[24/] The Commission then found that the entire 220 megahertz should be allocated for emerging technologies.[25/] In reaching this conclusion, the Commission has overlooked two essential intermediate steps. Before the Commission decides to allocate the entire 220 megahertz for emerging technologies, it must make a definitive finding that all of

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23/ See ¶ 11, supra.

24/ Notice, ¶ 11.

25/ The Notice states that "[b]ased on the findings of our staff study, we propose to reallocate 220 MHz of the 1.85 to 2.20 GHz band that is currently used for private and common carrier fixed microwave services." Notice, ¶ 19.

this spectrum is required to accommodate emerging technologies. Additionally, before the Commission can make a definitive finding concerning how much spectrum is required for emerging technologies, it must define with some precision the emerging technologies that should be accommodated. It has failed to perform either of these two intermediate steps.

20. The 220 megahertz proposed for allocation to emerging technologies significantly exceeds the total amount of spectrum now allocated by the Commission for both private and common carrier land mobile services. There is approximately 180 megahertz of spectrum now dedicated to land mobile usage under Part 22 and Part 90 of Commission's Rules. Thus, the entire private radio and common carrier land mobile community has survived, and indeed flourished in many markets, on considerably less spectrum than the Commission is proposing to make available for emerging technologies. This clearly indicates that the amount of spectrum identified in the Notice for emerging technologies is excessive.